ECO HOUSE COMFORT

FHT 80b Wall Thermostat and FHT 8V Wireless Actuator

Installation and User Guide

Product Codes EHC-FH02 and EHC-FH03

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1. Intended Use

The radio-controlled radiator thermostat set comprises of three components:
• the *FHT 80b* Wall Thermostat (heating control),
• the *FHT8V* Actuator (valve operating mechanism), and
• the *FHT 80TF* Door / Window Contact Sensor (sold separately).

The system is used for temperature control in individual rooms in which the heat that dissipates from radiators is controlled by reducing the flow of hot water in the heating system.

The *FHT 80b* heating control measures the room temperature by means of an integrated sensor and transmits the corresponding control data to up to eight *FHT 8V* valve operating mechanisms (i.e. max. 8 radiators per room)

The *FHT 80b* can analyze the status signals (window open/closed) of up to four *FHT80 TF* door/window contact sensors and, in order to save energy when a room is aired, automatically reduce the temperature down to a so-called ‘Window open’ temperature, when the room’s window is opened.

The *FHT 80b* also facilitates a bi-directional radio connection with the *FHZ 1000* House Central Unit.

Any other use (e.g. in cooling systems, floor heating systems, etc.) is not permitted and may lead to severe damages.

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2. Description and Function

Compared with simple mechanical thermostats (a.k.a. TRVs), the radio-controlled radiator thermostat systems have a number of advantages:

• the split between the radiator-mounted valve operating mechanisms and the freely positionable operation and control units (e.g. the *FHT 80b* heating control which is part of the scope of supply) makes it possible to perform settings easily.
• the programming option makes it possible to adapt the system to the lifestyle of its users, so that the room is always comfortably warm when it is used. When the room is not used, the temperature may be reduced automatically to save energy, i.e. the often cumbersome manual opening and closing of heating valves is no longer required.
• the system is equipped with an integrated calcification protection. Once every week (time can be set) the valve operating mechanism opens and closes the valve to prevent blocking of the valve by lime deposits.

2.1.Operating principle

In the *FHT 80b* heating control, the room temperature is measured and compared to the desired temperature (set either by means of the time program or manually). The difference is used to calculate how far the valve has to be opened or closed to obtain the desired temperature. Using time interval of approximately two minutes, the radio commands are sent to the *FHT 8V* valve operating mechanism mounted on the radiator. This valve operating mechanism then reduces or increases the heat. Heating up of a room takes some time, depending on the size of the radiators. If the desired temperature is changed, the room temperature changes with a certain delay. Deviations between the desired value and the room temperature may also be caused by various disturbance variables, such as draughts, other sources of heat in the room, or an insufficient supply of heat from the heating boiler. Temperature measurement within the control is very exact (deviation <1*C). To avoid any unnecessary operation of the valve, e.g. when the room temperature changes temporarily because a door is opened, several measured values are averaged during the two minutes communication gap. The heating control's integrated receiver also allows the *FHT 80b* to receive the status signals from up to four *FHT 80TF* door/window contact sensors.

Changes (‘Window open’ or ‘Window closed’) are signaled to the heating control within a time period of about 1 minute. This allows the heating control to adjust the temperature after an average of 30 seconds, in order to save energy when, for example, a room is aired.

2.2.Safety code

The radio signal is protected by a safety code consisting of two parts. This safety code protects the system against interference from other radio systems and ensures that several radio-controlled radiator thermostat systems can be operated separately in a household. Each part of the code comprises 100 setting options. This means that there are 10,000 different safety codes available. To ensure communication between the heating control and the valve operating mechanism/s the same safety code has to be set for all devices in a room.

To ensure communication between the heating control and the valve operating mechanism(s) the same security code has to be set for all devices in a room. A random security code is set by the manufacturer.

When supplied as a set (heating control and valve operating mechanism) the valve operating mechanism is preset to the heating control’s security code.

If you purchased the heating control and valve operating mechanism separately (or you want to use additional valve operating mechanisms for a heating control), then the security code has to be transmitted to each of the valve operating mechanisms. See section 9.4. or section 9.5.

The security code is also used for communicating with the *FHZ 1000* central unit and the *FHT 8W* Heat Demand Relay.

The *FHT 80TF* door/window contact sensors are equipped with a randomly generated factory default code that cannot be changed. Since there are over 16 million different possible codes, changing the code of the door/window contact sensor is not necessary; duplication is virtually impossible.

2.3.Information on the range

The transmission power is less than 10mW, much below that of a mobile phone which may have a transmission power 200 times as great. Adverse effects on sensitive people and animals are not to be expected.

The wireless radiator thermostat system uses the 868MHz range, which is also used by other radio services. Therefore devices that operate on the same or neighboring frequencies may restrict both its operation and its range.

The specified range of up to 100m (to the ‘FHT8V’ valve operating mechanism) or up to 300m (to the ‘FHZ1000’) is the free-field range, which means the range with visual contact between the transmitter and receiver. In practice, however, walls, ceilings, etc. between the transmitter and the receiver may affect and reduce the range.

Other causes of reduced ranges:

- All types of high-frequency interference
- Any buildings or vegetation
- Conductive metal parts that are located near the devices or within or near their transmission path, for example, radiators, metallised insulation glass windows, reinforced concrete ceilings, etc.
- Influence on the radiation pattern of antennas due to the distance from the transmitter or receiver to conductive surfaces or objects (also to human bodies or the ground)
- Broadband interference in urban areas that reduces the signal-to-noise ratio; the signal is no longer recognised due to this ‘noise’
- Interference radiation resulting from insufficiently shielded electronic devices, for example, operating computers or similar

3. Safety Information

The warranty will lapse for damage due to non-compliance with these operating instructions. We shall not be held liable for any consequential damage or loss! We shall not accept liability for damage to property or personal injury caused by incorrect handling or non-compliance with the safety instructions. Any claim to warranty will lapse in such cases.

3.1.General

Do not use this product in hospitals or medical institutions. The product does only emit relatively weak radio signals. These radio signals could, however, lead to malfunctions in life-supporting systems. The same may possibly apply to other areas.

The product must only be used in dry indoor areas, it must be protected from moist and water.

The product is not a toy and must be kept out of the reach of children.
For safety and licensing (CE) reasons, unauthorized conversion of and/or modifications to the product are not permitted.

Do not leave the packaging material lying around carelessly. Plastic film and/or bags, polystyrene parts, etc. can be dangerous in the hands of children.
Handle the product with care. It can be damaged through impact, blows, or by being dropped even from a low height.

3.2.Batteries and accumulators

• Keep batteries / accumulators out of the reach of children;
• Make sure to insert the batteries/accumulators with the correct polarity;
• Do not leave the batteries lying around in the open; there is a risk of them being swallowed by children or pets. If swallowed, immediately contact a doctor.
• Leaking or damaged batteries/accumulators may cause burning if they come into contact with the skin. For this reason you should use suitable protective gloves when handling batteries.
• Do not short-circuit batteries/accumulators, and do not throw batteries/

accumulators into a fire. There is a risk of explosion!
• Do not disassemble batteries / accumulators!
• Do not recharge normal batteries. There is a risk of explosion!
• In case of longer periods of non-use (e.g. during storage) remove the inserted batteries/accumulators to avoid damage by a leaking battery/ accumulator.

4. Inserting / Replacing the Batteries on *FHT 80b*

• Slide down and remove the wall holder on the back of the heating control.
• Slide down and remove the cover of the battery compartment (in direction of the imprinted arrow on the cover).
• Insert two LR6 (Mignon/AA) batteries; pay attention to the correct polarity. Look into the battery compartment for an illustration of the correct polarity (make sure to insert the batteries correctly to avoid damage to the electronic components of the heating control).

We recommend to use high-quality alkaline batteries only. Operation of the heating control using accumulators or conventional zinc-carbon batteries is possible, however the operating time and radio range of the heating control will be reduced.

• Close the battery compartment.
• The heating control performs a short display test. After the display test, you have to set date and time).
• If the battery symbol (“  “) is displayed on the LC display, the battery voltage is low and the batteries should be replaced as soon as possible. The same applies, if the radio range decreases or if data are no longer displayed on the LC display.

5. Control Panel

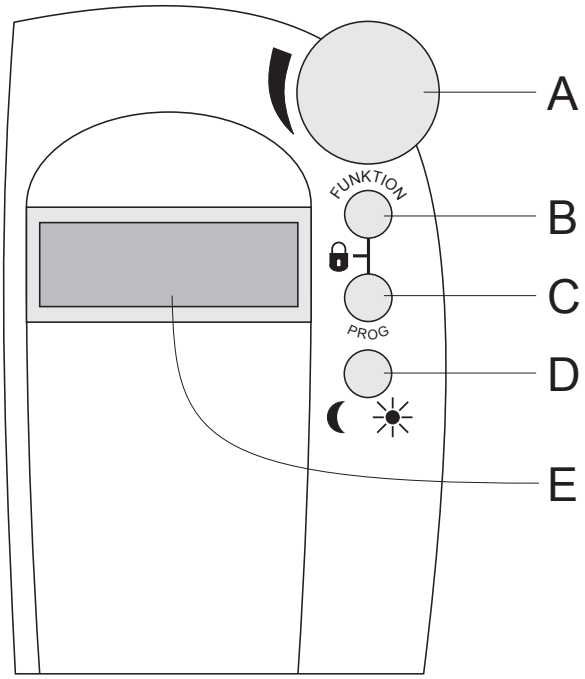

Figure 1

A Scroller for settings

B '**FUNKTION**' button

C '**PROG**' button

D '☾ ☀' button

E LCD

6. Wall Mounting of the *FHT 80b*

6.1. Choosing an appropriate mounting location:

Make sure to choose an appropriate location for the mounting of the *FHT 80b* heating control. This has to meet the following requirements:

• chose central position in the room where the temperature is to be controlled;
• easy access for convenient operation;

• mounting at eye level for easy reading of the display;
• no mounting on a badly insulated outer wall;
• no direct sunlight;
• no interference from heat sources such as radiators, TV sets, lamps, refrigerators,etc;
• no mounting next to a window;
• greatest possible distance to metal objects to avoid any unnecessary reduction of the operating range

6.2. Mounting the wall holder

Proceed as follows to mount the wall holder:
• Remove the wall holder on the back of the heating control, slide it down for this;
• Place the wall holder vertically against the wall with the round side pointing up (see picture);
• Mark the positions of the bores through the two slotted holes;

• Depending on the type of wall drill two 6 mm holes and insert suitable dowels. **When drilling the bores and tightening the screws make sure not to damage any power lines or gas or water pipes, etc.!**
• Fix the wall holder using the enclosed screws. Pay attention that the two recessed slotted holes for the screws point in your direction;
• If not already done so, insert the batteries into the heating control before you slide the heating control on the wall holder;
• Sliding of the heating control on the wall holder is now possible from the top.

6.3.Setting the Date and Time

• If the display is protected by a foil, remove it;
• If batteries have not been inserted yet, proceed as de- scribed in chapter 4 to insert them. After inserting the batteries an automatic display test is per- formed (all segments and displays of the LC display are displayed for several seconds). After the display test you may set the year, the month, the day, the hours and the minutes on the heating control.

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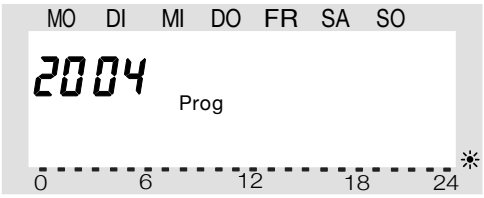
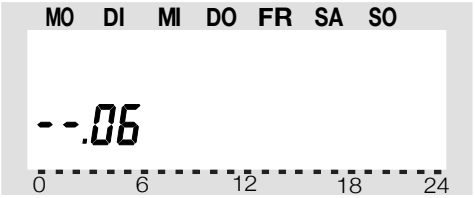
Use the selection wheel to change the displayed values. To confirm your selection, briefly press the “PROG” key.

• After inserting the batteries the year is displayed:



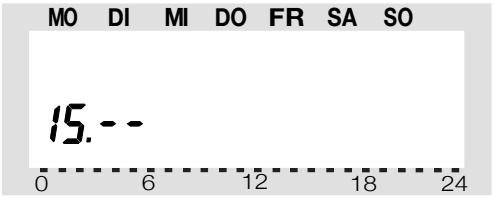
Use the selection wheel to set the desired year. To confirm your setting, briefly press the “PROG” key.

• The month is displayed:



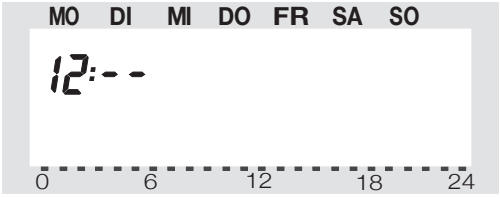
Use the selection wheel to set the desired month, and con- firm your setting again by pressing the “PROG” key.

• The day is displayed:



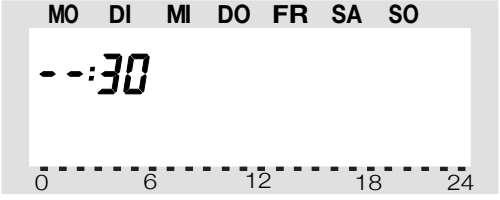
Use the selection wheel to set the desired day, and confirm your setting by pressing the „PROG” key.

• The hours are displayed:



Use the selection wheel to set the desired hour, and confirm your setting by pressing the “PROG” key.

• The minutes are displayed:



Use the selection wheel to set the desired minutes, and confirm your setting by pressing the “PROG” key.

• The LCD then displays ‘Sync’, the current security code and ‘120’. The heating control counts down from ‘120’ in steps of 1 second and then returns to the normal operating mode.

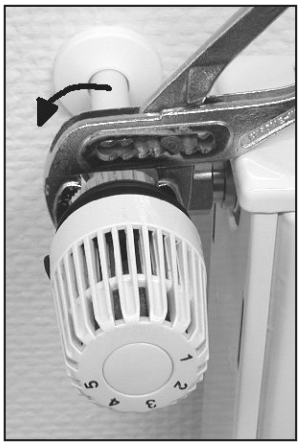
During this time the heating control cannot be operated. The heating control now synchronizes its operation with the valve operating mechanisms.

Please make a note of the displayed security code on a slip of paper and write the name of the room, in which the heating control is installed, underneath the code. You will need this information if you intend to register the heating control to a ‘FHZ1000’ home radio central unit.

• Slide the heating control onto the wall holder from above until it snaps into place. See figure on the right.

7. Mounting of the *FHT 8V* Valve Actuator

7.1. Remove the old Thermostatic Head



• Remove the old mechanical thermostat;
• If necessary, use multi grip pliers to loosen seized screws by turning them counterclockwise (see picture on the right).

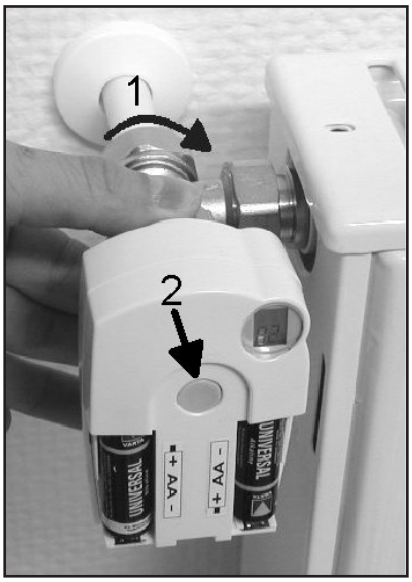
7.2. Insert the batteries in the valve operating mechanism

• Remove the battery compartment cover of the valve operating mechanism by sliding it down.
• Insert two AA batteries into the battery compartment. Make sure to insert the batteries with the correct polarity, see illustration in the battery compartment

and figure on the right side.

• “C1” is displayed first, followed by a two digit number, “C2”, and another two-digit number. These two numbers are the currently stored safety code of the valve operating mechanism (e.g. 11 and 22 = safety code 1122).
• An acoustic signal is generated, and“A1”is displayed.
• The valve operating mechanism fully retracts the control pin to facilitate mounting.
• Now“A2” is displayed.

7.3. Mounting the valve operating mechanism on the radiator



• Manually turn the coupling nut to fasten the valve operating mechanism on the valve (“1” in the figure on the right side). When using valves by “Danfoss” mount one of the adaptors enclosed on the valve first. The figures on the next page show the adaptors that have to be used for each valve. Additional adaptors for other valves may be purchased separately.
• Briefly press the (2) key on the valve operating mechanism once (see figure on the right side).
• “A3” is displayed on the LC display of the valve operating mechanism, and the valve is closed.

• On the display, the antenna symbol flashes and “0%” is displayed.
• Close the battery compartment.

Please note:
If you purchased the valve operating mechanism separately and not as part of a set comprising a heating control and valve operating mechanism, for example, then the security code must first be transmitted. This is described in detail in section 9.4.).

• The valve operating mechanism acknowledges receipt of the first wireless protocol with a signal tone.

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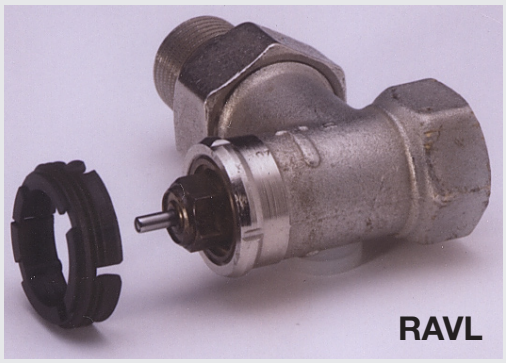
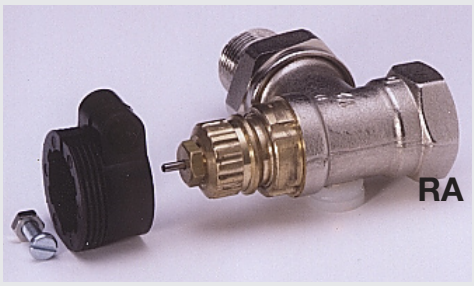
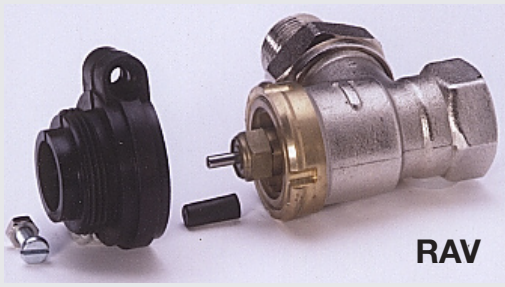
• The antenna symbol is now permanently displayed.
• This completes the installation and you can now adapt the pre-programmed settings to your individual needs.

Please note:
• Proceed as described above, if you wish to install further valve operating mechanisms.
• Afterwards, the number of radiators/valve operating mechanisms must be set on the heating control (section 9.4.) and the security code must be transmitted (section 9.5.).

Examples of “Danfoss” adaptors:







After snapping-on the adaptors for the valves of the types “RAV” and “RA” on the valve body fix the adaptors with the enclosed screws and nuts.
For valves of the type “RAV” additionally put the cylindrical extension piece onto the valve pin.

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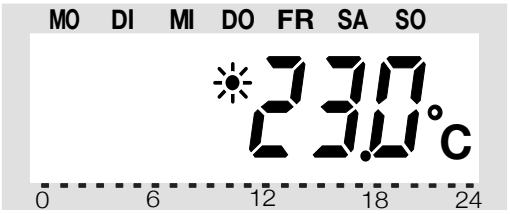
8. Programming the System

8.1. **Setting the comfort temperature, lowering temperature and the ‘Window open’ temperature**

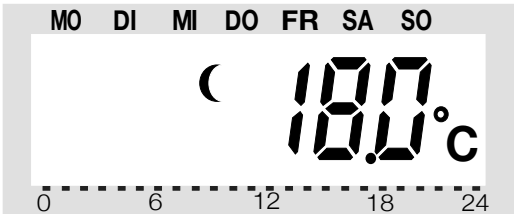
When the automatic mode has been activated and switching between the lowering temperature and the comfort temperature is performed automatically, a bar in the lower part of the display indicates the time of day at which the temperature will be set to the comfort temperature.
A sun symbol on the display indicates that the comfort temperature is active; a moon symbol indicates that the lowering temperature is active.
If one or several *FHT 80TF* door/window contact sensors are installed in a room, then the so-called ‘Window open’ temperature is automatically activated after the monitored door or monitored window has been opened (irrespective of which operating mode has been set).
Proceed as follows to change the settings:

Press and hold the ‘ ☾ ☼ ’ button longer than 3 seconds. The comfort temperature is displayed on the LCD. The sun symbol ‘ ☼ ’ blinks.



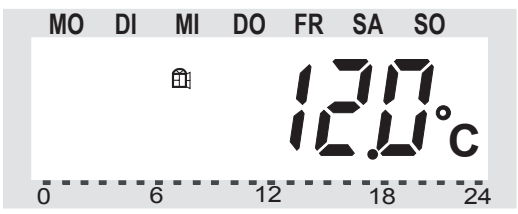
Use the scroller to set the desired comfort temperature. To confirm briefly press the ☾ ☼ button.

The lowering temperature is then displayed on the LCD. The moon symbol ☾ blinks. Use the scroller to set the desired lowering temperature. To confirm briefly press the ☾ ☼ button.



The LCD displays the ‘Window open’ temperature. The door/window symbol ‘ 🪟 ’ blinks.

Use the scroller to set the ‘Window open’ temperature you require. To confirm briefly press the ‘ ☾ ☼ ’ button.



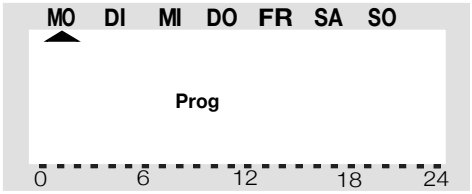
The heating control now returns to the normal operating mode.

8.2.Setting / changing the weekly profile

The time for automatic switching between the comfort temperature and the lowering temperature can be set separately for each day of the week. That way you may adapt the desired room temperature to your individual lifestyle.

For each day of the week, four switching times (comfort temperature on, lowering temperature on, comfort temperature on, lowering temperature on) can be set. These 4 switching times can be different for each day of the week. This makes it possible to start heating later on weekends or on certain days of the week.

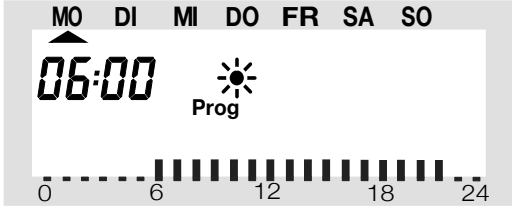
• Briefly press the “PROG” key.
• “Prog” is displayed



• Use the selection wheel to select the day for which you want to change the time program. You may either select each day of the week individually (MO, DI, MI, DO, FR, SA, SO) or program a combination of days (block), i.e.:
- weekend (SA, SO)
- weekdays (MO, DI, MI, DO, FR)
- all days (MO, DI, MI, DO, FR, SA, SO)

This option facilitates and speeds up the programming process.
Briefly press the “PROG” key to confirm your selection of a weekday or a block of days (weekend, weekdays, all days).

• The time when the comfort temperature will be switched on is displayed:



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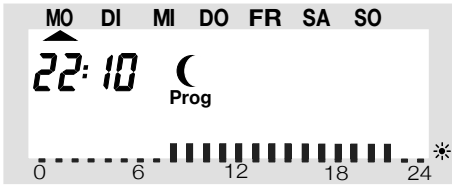
Use the selection wheel to select the time when control of the comfort temperature is to be started. On the bottom of the LC display a scale is displayed to facilitate orientation (long marks = comfort temperature is active).

Briefly press the “PROG” key to confirm the starting time.

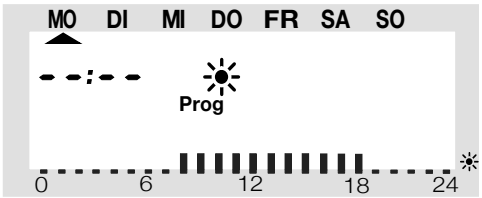
• On the LC display the time when the lowering temperature is to be activated is displayed:



Use the selection wheel to select the time when control of the lowering temperature is to be started.
Briefly press the “PROG” key to confirm the starting time.

• Repeat the steps described above to program the second comfort temperature time and the second lowering temperature time.

If one of the switching times is not to be used, turn the selection wheel to the right side until four bars are displayed (“--:--”, bars are displayed next to the displayed time 23:50 hrs).



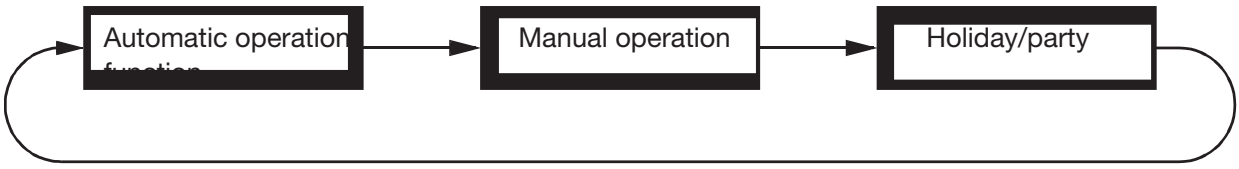
If you set the second comfort temperature time to „--:--“ the setting of the second lowering temperature time is irrelevant, since no data are changed. In all, you may set two periods of time for comfort temperature, e.g. from 6.00 to 9.00 hrs and from 16.00 to 23.00 hrs.

After setting of the second lowering temperature time and confirming the setting by pressing the „PROG” key the normal operating mode is active again.

The scale displayed on the bottom of the LC display follows the changes as they are being made, i.e. the effect on the day profile is immediately visible. Please note that the temperature at the end of the previous day is not displayed. This means that it may be that the heating phase at the end of the previous day is continued the next day. However, this is not displayed during programming!

8.3. Operating modes

Press the “FUNKTION” key to change the operating mode. Press this key several times to scroll through the different operating modes:



• Automatic operation

In the automatic operating mode (display “Auto” on the LC display) the room temperature is controlled according to the set program for the weekday.
The temperature history for the current weekday is displayed on the bar scale on the bottom of the display.

A temporarily temperature change can be set easily with the selection wheel. The next time a regular temperature change is scheduled the thermostat will then automatically return to the time-controlled program.

• Manual operation

In the manual operating mode (display “Manu”) the heating control maintains the set temperature. An automatic time-controlled change will not be performed.
This function is identical to the function of a conventional thermostat.

• Holiday/party function

In this operating mode (display of suitcase symbol) the temperature is kept at a certain fixed value for a defined period of time (e.g. the duration of a party

or a holiday). After this, the heating control automatically switches to the automatic mode.

Setting the holiday/party function:
• Select this operating mode with the “FUNKTION” key and set the period of time this function is to be active. During the following 24 hours the temperature will be reduced every 30 minutes (party function). After 24 hours the temperature will be reduced every day (holiday function). Set the day you will return from your holidays. As of this day and starting at 0.00 hrs heating will be performed with the normal time program.
• Confirm your setting of the desired period of time by briefly pressing the “PROG” key.
• Use the selection wheel to set the desired temperature. If you select a different operating mode with the “FUNKTION” key, you will automatically quit the holiday/party mode.

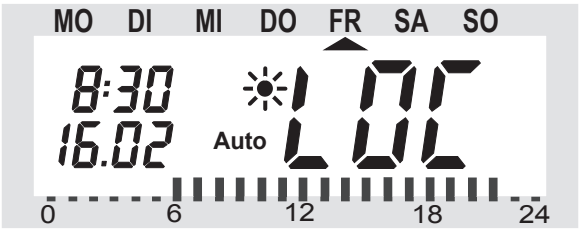
8.4. Key lock (for keys and selection wheel)

The heating control is equipped with an integrated key lock for the keys and the selection wheel, to protect the device from unintentional operation (i.e. by children).

Activating the key lock

• To activate the key lock, simultaneously press the keys “FUNKTION” and “PROG”.

• “LOC” is displayed briefly on the display, all operating functions are blocked.



Deactivating the key lock

• To deactivate the key lock, simultaneously press the two keys “FUNKTION” and “PROG” until “LOC” is no longer displayed (after about 2 seconds).

• All operating functions are available again.

8.5. Switching between comfort temperature and lowering temperature

If a room is used at different times than set in the time program, you may change the temperature any time using the scroller. You can also switch directly from the comfort temperature to the lowering temperature by pressing the ‘ ’ button.

8.6. Heating Pause

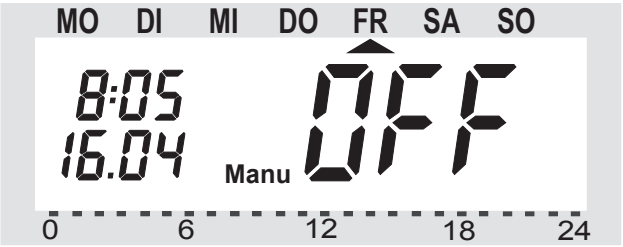
Switching off the heating during the summer conserves the actuator’s batteries and extends the service life of the batteries.

During the heating pause the valve is opened completely and remains in this position. However, the weekly decalcification cycle is still carried out.

Proceed as follows to activate the heating pause:
• Press the ‘FUNKTION’ button to switch to the ‘Manu’ operating mode.
• Turn the scroller clockwise until ‘On’ appears on the LCD.

8.7. Closing the valve

Select this operating mode, if you do not want to heat the room at all. The valve is closed and remains in this position.



The valve is only opened, if the temperature drops below 5°C (danger of freezing). The weekly decalcification cycle is still carried out.
• Press the ‘FUNKTION’ button to switch to the ‘Manu’ operating mode.
• Turn the scroller anti clockwise until ‘OFF’ appears on the LCD.

8.8. Emergency operation of the valve operating mechanism

If an error occurs that cannot be eliminated (because the batteries of the heating control or valve operating mechanism are low and no new batteries are at hand, for example) it may be necessary to operate the valve manually. To do so, proceed as follows:

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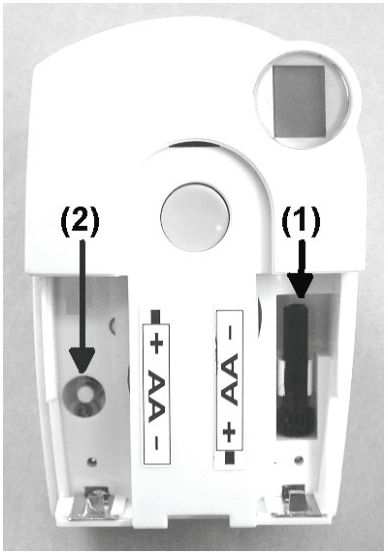
• Remove both batteries from the valve operating mechanism.
• Remove the control pin by pressing on the position marked with a (1).
• Place the control pin onto the peg marked with a (2).
• Turn the control pin:
  - Clockwise = increase heat
  - Anti clockwise = reduce heat



8.9. ‘Window Open’ detection

The installed *FHT 80TF* door/window contact sensors require no operation. They detect when a window or a door has been opened and notify the heating control by radio signal accordingly. The heating control then reduces the target temperature to the ‘Window open’ temperature that has been set.

Likewise, when all the windows are closed, the heating control is notified of this again by radio signal and restores the original temperature.

The temperature can also be changed manually to a different value at any time while the window is open.

The *FHT 80TF* indicates that is has detected a change of state via its signal LED:
1 long blink - Window opened
3 short blinks - Window closed

9. Special Functions

The heating control has several special functions. To access the special functions menu press the ‘PROG’ button until ‘Sond’ appears on the LCD. Then release the ‘PROG’ button.

The special functions menu can only be accessed when the heating control is in the normal operating mode (time and date are displayed on the left of the display and the temperature is displayed on the right of the display).

The following special functions are available:

CALC - Setting the time for the decalcification cycle

°C°F - Selecting the temperature unit (°C or °F)

dAt - Date and time setting

CodE - For changing the radio transmission security code or setting codes for new valve operating mechanisms

An A - Setting the number of valves controlled by the heating control or extending the system

SYNC - Synchronising the valve operating mechanisms

tEst - Test function for radio transmission

StEL - Displaying the valve position

CEnT - Default setting for the radio connection to the House Central Unit

FEn - Door/window contact sensor's menu

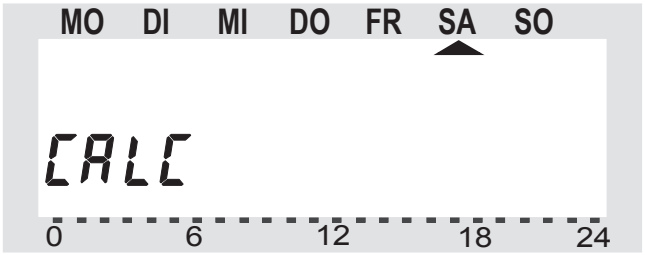
OFFS- Setting the offset (this option is only displayed, if there is more than one valve operating mechanism)

9.1.Setting the decalcification time ('CALC')

The valve is completely opened and closed once a week. This prevents deposits from blocking the valve. You can use the special 'CALC' function to change the time at which the decalcification cycle is carried out.

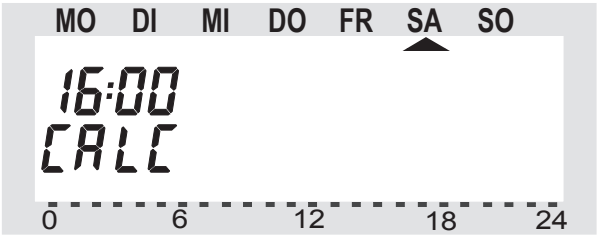
• Press the 'PROG' button until 'Sond' is displayed. Then release the 'PROG' button.
• Use the scroller to select the special 'CALC' function.
• Confirm this by pressing the 'PROG' button.

• Use the scroller to select the day of the week (arrow up symbol ‘’ beneath the respective day of the week).
• Confirm the day of the week you have selected by pressing the ‘PROG’ button. The time at which the decalcification cycle will be carried out now appears in the first line of the LCD.



• Use the scroller to change the time.

• Confirm the decalcification time that you have set by pressing the ‘PROG’ button. The heating control now returns to the normal operating mode.



9.2.**Selecting the temperature unit (‘°C°F’)**

Here you can select whether the temperature is to be displayed in degrees Celsius (°C) or degrees Fahrenheit (°F).

• Press the ‘PROG’ button until ‘Sond’ appears on the LCD (for special function).
• Use the scroller to select the special ‘°C°F’ function.
• To confirm your selection, briefly press the ‘PROG’ button.
• You can use the scroller to switch between ‘°C’ and ‘°F’.
• To confirm your selection, briefly press the ‘PROG’ button. The heating control now returns to the normal operating mode.

9.3. Setting the date and time (‘dAt’)

• Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
• Use the scroller to select the ‘dAt’ function.
• To confirm your selection, briefly press the ‘PROG’ button.
Carry out all further settings as described in section 6.3., page 10

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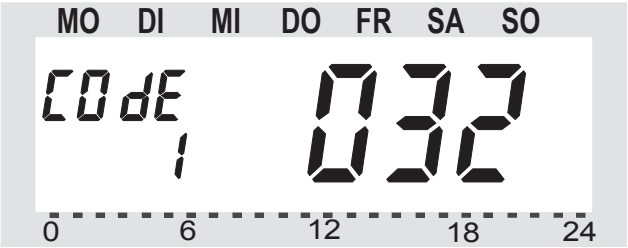
9.4. Setting the security code (‘CodE’)

To protect the heating control against interference from other radio systems the device uses a two-part security code.
Each part of the code comprises 100 setting options. This means that a total of 10,000 different security codes are available.
To ensure communication between the *FHT 80b* heating control and the *FHT 8V* valve operating mechanism(s) the same security code has to be set for all the devices in a room.
This is particularly important, if you use more than one valve operating mechanism or you have not purchased a set (heating control and valve operating mechanism).

Proceed as follows to change or set the code:

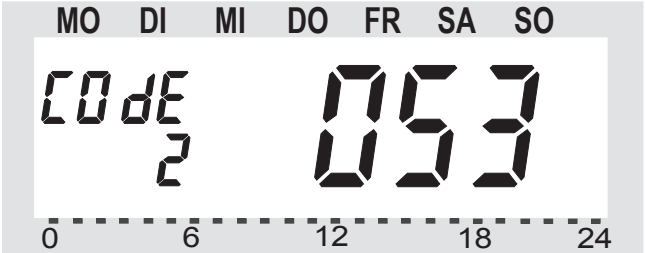
• Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
• Use the scroller to select the ‘CodE’ function.
• To confirm your selection, briefly press the ‘PROG’ button.

The following information is displayed:



• Use the scroller to select the first part of the code (a number between ‘000’ and ‘099’) and confirm your selection by briefly pressing the ‘PROG’ button.

• The following information is displayed:



• Use the scroller to select the second part of the code (a number between ‘000’ and ‘099’) and confirm your selection by briefly pressing the ‘PROG’ button.

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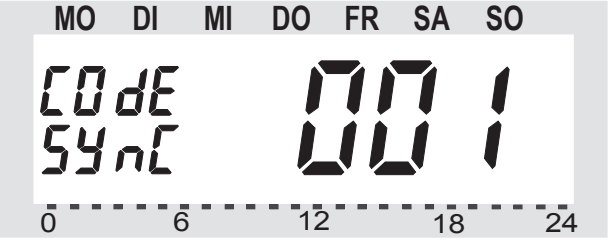
• The following information is displayed:



Now you need to synchronise the (first) valve operating mechanism (‘001’ on the display) to the new security code. Proceed as follows to carry out this synchronisation:

• Remove the battery compartment cover of the (first) valve operating mechanism by sliding it down.
• Press the button on the valve operating mechanism for approx. 3 seconds until you hear 3 signal tones. The valve operating mechanism is now ready to receive and ‘AC’ is displayed.
• Press the ‘PROG’ button on the ‘FHT80B’ heating control to start transmitting the security code to the valve operating mechanism.
• The valve operating mechanism acknowledges that it has received the code correctly with a tone sequence.
• Replace the valve operating mechanism’s battery compartment cover.
• The valve operating mechanism acknowledges that it has received the first normal radio signal with a signal tone.

Now repeat these steps for all the other valve operating mechanisms in the room (‘002’, ‘003’... on the display).

After the last valve operating mechanism has been coded the heating control automatically returns to the normal operating mode.
If the heating control is used to control several valve operating mechanisms, in other words, several radiators are located in one room, you should make a note of which valve operating mechanism belongs to which radiator, that means the number.
If coding of a valve operating mechanism fails (for example, due to bad reception, a low battery or similar), the security code can be transmitted to this valve operating mechanism again at a later time.

• Proceed as described above and skip the valve operating mechanisms that have already been coded by briefly pressing the ‘PROG’ button.
• If the LCD shows the number of a valve operating mechanism that has not yet received a security code, press the control button on this valve operating mechanism until ‘AC’ is displayed on the valve operating mechanism and you hear 3 signal tones. Also see the information above.
• Now press the ‘PROG’ button on the heating control to get the heating control to transmit the security code. The valve operating mechanism uses a tone sequence to acknowledge that it has received the code correctly.

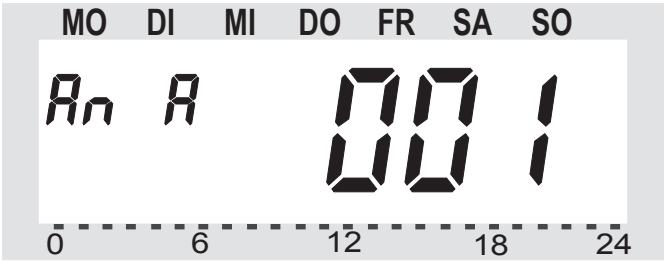
Afterwards, replace the valve operating mechanism’s battery compartment cover. The valve operating mechanism uses a signal tone to acknowledge the first receipt of a normal radio signal.

9.5.Setting the number of valve operating mechanisms (‘An A’)

You use this menu item to set the number of radiators (valve operating mechanisms) to be controlled when the heating control is used to control several valve operating mechanisms in one large room, for example.

If you install an additional valve operating mechanism, you must ensure that this valve operating mechanism is assigned the same security code as the valve operating mechanisms, which are already installed.

• Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
• Use the scroller to select the special ‘An A’ function.
• To confirm your selection, briefly press the ‘PROG’ button.
• The following information is displayed:



• Use the scroller to set the number of radiators (1 to 8) and confirm your setting by briefly pressing the ‘PROG’ button.

The (first) valve operating mechanism is now synchronised to the new security code. ‘CodE SynC 001’ appears on the heating control’s LCD.

Repeat the following 6 steps (see next page) for each installed valve operating mechanism:

1. Remove the battery compartment cover of the (first) valve operating mechanism by sliding it down and out.

2. Press the button on the valve operating mechanism for approx.3 seconds until you hear 3 signal tones. The valve operating mechanism is now ready to receive and ‘AC’ is displayed.

3. Press the ‘PROG’ button on the heating control to start transmitting the heating control’s security code to the valve operating mechanism.

4. The valve operating mechanism acknowledges that it has received the code correctly with a tone sequence.

5. Replace the valve operating mechanism’s battery compartment cover.

6.Thevalveoperatingmechanismacknowledgesthatithasreceivedthefirstnormalradio signal with a signal tone.

Repeat these 6 steps for all the other valve operating mechanisms that are located in the room (‘002’, ‘003’ ... on the display) according to the number of valve operating mechanisms that has been set.

Once all the valve operating mechanisms have been coded the heating control automatically returns to the normal operating mode.

You can skip any valve operating mechanisms that have already been synchronised / programmed to the heating control’s security code.

All you need to do is briefly press the ‘PROG’ button on the heating control (do not open the respective valve operating mechanism/do not press the button on the valve operating mechanism!)

9.6. Synchronising the valve operating mechanisms (‘SYnC’)

When this menu item is selected, the heating control starts to signal (for approx. 2 minutes) to all the valve operating mechanisms that they should re-synchronise.

Afterwards the normal transmission program is continued and the valve operating mechanisms generate a signal tone as soon as they receive the first correct signal.

• Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
• Use the scroller to select the special ‘SynC’ function.
• To confirm your selection, briefly press the ‘PROG’ button.
• The LCD then displays the security code and the heating control counts down from ‘120’ in steps of 1 second. After these 120 seconds the heating control returns to the normal operating mode.

9.7. Test mode (‘tESt’)

You can use this function to check whether all the valve operating mechanisms receive the radio signal correctly. The addressed valve operating mechanisms acknowledge correct reception with an acoustic signal. Use the scroller to select the valve operating mechanisms to be tested.

If the large display shows a ‘0’, then all the receivers are tested, otherwise, only the valve operating mechanism assigned to the displayed number is tested. The timer in the left corner of the display counts down to the time at which the next test cycle is to be started.

- Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
- Use the scroller to select the special ‘tESt’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- Use the scroller to select the valve operating mechanism/s to be tested.
- Press the ‘PROG’ button to quit the test function.
  h) Displaying the valve position (‘StEL’)
  When you select this menu item the heating control’s LCD indicates how far the valve is opened
  as a percentage (only for valve operating mechanism 1).
- Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
- Use the scroller to select the special ‘StEL’ function.
- To confirm your selection, briefly press the ‘PROG’ button.

- The display shows the valve opening as a percentage (only possible for valve operating mechanism 1).
- Press the ‘PROG’ button to quit this function.

9.8.Connecting to the home radio central unit (‘CEnt’)

You only require this special function, if you want the heating control to work with a new *FHZ1000* central unit or no central unit at all, in other words, you wish to unregister the heating control from the central unit.

Radio communication between the heating control and the central unit is also protected by the heating control’s security code. For this purpose the respective heating control is ‘registered’ with the central unit.

To ensure that the heating control only works with your central unit and not with your neighbor's central unit, for example, the heating control can only be registered with one central unit.

If you want to register the heating control with another central unit, then you must first to re- enable the heating control. 3 different settings are possible:

‘On’: Heating control is registered with the central unit

‘Off’: No radio communication with the central unit. Registration is not possible.

‘nA’: Heating control is enabled for registration with the central unit

To set, proceed as follows:

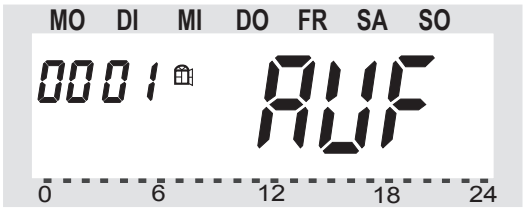
- Press the ‘PROG’ button until ‘Sond’ appears on the LCD.
- Use the scroller to select the special ‘CEnt’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- The LCD displays the current setting (‘On’, ‘Off’, ‘nA’).
- Use the scroller to select the setting you require (‘On’, ‘Off’, ‘nA’) and confirm your selection by pressing the ‘PROG’ button.
  The heating control then returns to the normal operating mode.

9.9. Querying the status of a door/window contact sensor (‘FEn’)

You can use the ‘FEn’ special function menu to request the current status of a *FHT 80TF* door/ window contact sensor. You can also use this menu to newly register or delete door/window contact sensors.

Proceed as follows to access the door/window contact sensor’s menu:

- Press the ‘PROG’ button until ‘Sond’ appears on the LCD.
- Using the scroller, select the special ‘FEn’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- The LCD shows the status of the door/window contact sensor stored at the first memory location:



The following status signals are possible:

‘nA’: Not registered, in other words, no door/window contact sen- sor is registered to this memory location

‘AUF’:The window is open

‘EA‘: Reception failure, in other words, no signals have been received from the door/window contact sensor over a long period of time

no display: Window closed, reception OK

Battery symbol  ’: This door/window contact sensor’s batteries are low and must be replaced

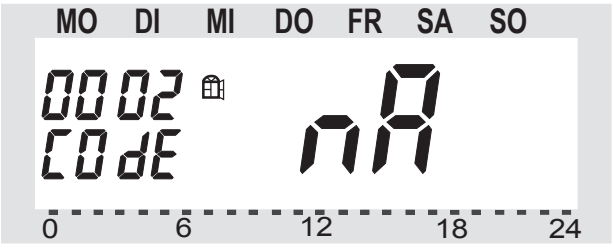
By turning the scroller you can select which of the four memory locations should be displayed.

Briefly press the ‘PROG’ button to quit the door/window contact sensor’s status indicator. The heating control returns to the normal operating mode.

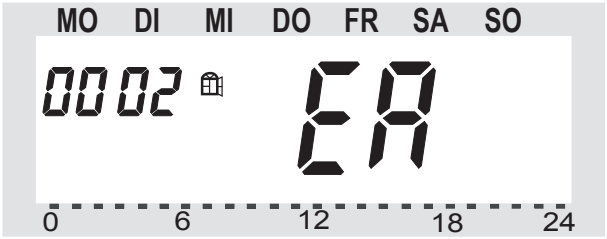
9.9.10. Registering a door/window contact sensor

Proceed as follows to register a door/window contact sensor with the *FHT 80b* heating control:

- The *FHT 80b* door/window contact sensor must be properly installed.
- Press the ‘PROG’ button until ‘Sond’ appears on the LCD.
- Using the scroller, select the special ‘FEn’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- Use the scroller again to select the desired memory location.
- Keep the ‘FUNKTION’ button pressed until ‘CodE’ appears on the display:



- Now press the button located inside the door/window contact sensor’s casing (‘TA1’) until the red LED lights up. Then release the button.
- The door/window contact sensor transfers its coding to the heating control.
- ‘EA’ now appear on the heating control’s LCD:



- If no further door/window contact sensors need to be registered, return to the normal operating mode by pressing the ‘PROG’ button.

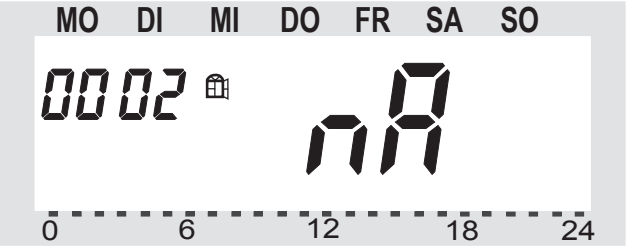
- After a few minutes the heating control is synchronised to the transmissions from the door/ window contact sensor and the system is ready for use.

9.11. Deleting door/window contact sensors

Door/window contact sensors that are no longer required or are no longer in operation should be deleted in order to avoid repeated error messages from being displayed (‘reception failure’). The power consumption also increases as attempts are regularly made to receive signals from the door/window contact sensors.

Proceed as follows to delete a door/window contact sensor:

- Press the ‘PROG’ button until ‘Sond’ appears on the LCD.
- Using the scroller, select the special ‘FEn’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- Using the scroller, select the door/window contact sensor that you wish to delete.
- Keep the ‘ ’ button pressed until the status is displayed as ‘not registered’ (‘nicht angemeldet’, ‘nA’):



• Briefly press the ‘PROG’ button to quit the status indicator. The heating control returns to the normal operating mode.

9.12. Radiator offset (‘OFFS’)

This setting option is only displayed, if you use more than one valve operating mechanism. If several radiators are controlled by one heating control, it may be that these radiators do not heat up to the same level.

The reason for this is that the flow rates of the valves differ greatly, depending on varying or poorly dimensioned radiators. This problem may be solved by

adjusting the settings of single radiators so that they give off more (positive offset) or less (negative offset) heat.

- Press the ‘PROG’ button until ‘Sond’ appears in the LCD.
- Use the scroller to select the special ‘OFFS’ function.
- To confirm your selection, briefly press the ‘PROG’ button.
- Use the scroller to select the valve operating mechanism/radiator you require, and confirm your selection by pressing the ‘PROG’ button.
- Use the scroller to set the offset, and confirm your setting by pressing the ‘PROG’ button. The heating control then returns to the normal operating mode.

You may have to repeat this process several times until the heating power has been optimally distributed.

10. Replacing the batteries

10.1. *FHT 80b* Wall Thermostat (heating control)

If the ‘ ’ symbol appears on the LCD, this means that the batteries are low and must be replaced.

To replace the batteries, proceed as follows:

- Remove the heating control from the wall holder and open the battery compartment cover (slide down).
- Remove the batteries from the battery compartment and dispose of them according to the applicable environmental regulations. See section 16, page 39.
- Insert two new AA batteries; make sure the polarity is correct. If possible, use alkaline batteries.
- Close the battery compartment.

- If a *FHZ 1000* central unit is present, the heating control automatically requests the current time and date and then sets these. Otherwise you need to set these manually.
  The time program settings, the comfort/lowering temperature settings and so on are maintained.
- As the heating control and the valve operating mechanism are no longer synchronised with each other, the heating control performs a synchronisation procedure (‘SYnC Auto’) that lasts approx. 2 minutes. After this synchronisation the heating control returns to the normal operating mode.

10.2. *FHT 8V* Actuator (valve operating mechanism)

The battery symbol appears when the valve operating mechanism’s batteries are low. In addition, an acoustic signal is generated every 2 minutes for one hour, three times a day.

To replace the batteries, proceed as follows:

- Remove the battery compartment cover from the valve operating mechanism by sliding it down.
- Remove the old batteries and dispose of them according to the applicable environmental regulations. See section 16, page 39.
- Wait until all the segments of the valve operating mechanism’s LCD have gone out. You can speed up this process by keeping the button on the valve operating mechanism pressed.
- Insert two new AA batteries into the valve operating mechanism’s battery compartment, making sure that the polarity is correct. Otherwise you may destroy the valve operating mechanism’s electronic components!
- The display shows ‘C1’ followed by a 2-digit number. The display then shows ‘C2’, followed by another 2-digit number (both numbers are the currently stored security code of the valve operating mechanism).
- A signal tone is then generated and ‘A1’ is displayed.
- The valve operating mechanism now fully retracts the control pin.
- ‘A2’ is then displayed.

- Briefly press the button on the valve operating mechanism.
- ‘A3’ is displayed and the valve operating mechanism closes the valve completely.
- The antenna symbol then blinks and ‘0%’ is displayed.
- The first radio signal that is received is acknowledged by a signal tone, and the antenna symbol is permanently displayed.
- Replace the battery compartment cover.

10.3. *FHT 80TF* Door / Window Contact Sensor

When the batteries in the door/window contact sensor are low, the device sends this information to the heating control. The corresponding error message (the window icon blinks) is shown on the heating control’s display. You can use the ‘FEn’ special function menu to identify the door/window contact sensor whose batteries are low.

To replace the batteries, proceed as follows:

- Open the casing by pushing the two catches on the left side of the casing approx. one millimeter inwards using a flat screwdriver while simultaneously pulling the lid forwards.
- Remove both of the old batteries and dispose of them according to the applicable environmental regulations. See section 16, page 39.
- Insert 2 new AAA batteries into the battery compartment, observing the correct polarity.
- Close the casing cover.
- If necessary, the door/window contact sensor now conducts a synchronisation procedure that lasts approx. 1 minute (the LED blinks every second).

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11. Troubleshooting

Problem	Possible cause	Solution
Permanent signal tone and 'F1' is displayed on the valve operating mechanism	• The valve is too tight or the valve operating mechanism is blocked	• Remove the valve operating mechanism • Manually check valve operation • Mount the valve operating mechanism again • If necessary, consult a heating technician
Permanent signal tone and 'F2' is displayed on the valve operating mechanism	• Control range is too large • Valve operating mechanism is not mounted to the heat ventilator	• Mount the valve operating mechanism again • Unsuitable valve • Insert a spacer that is 1mm thick (a washer, for example) between the heat ventilator and the actuator
Permanent signal tone and 'F3' is displayed on the valve operating mechanism	• Control range is too small	• Mount the valve operating mechanism again • Unsuitable valve
No radio symbol displayed on the valve operating mechanism. The valve operating mechanism generates a tone sequence every hour. The valve is 30% opened.	• Radio connection failure due to interference • Heating control's batteries are low • Heating control's code is not right (or has been misadjusted)	• Install the heating control in a different location • Replace the heating control's batteries • Transmit the current security code to the valve operating mechanism
'Low battery' symbol is displayed. The valve operating mechanism generates a tone sequence every 2 minutes for one hour.	• The valve operating mechanism's batteries are almost empty	• Replace the batteries
'LOC' is displayed when a button is pressed	Button lock is activated	• Deactivate the button lock
The window symbol '  ' blinks	• Radio connection failure to a door/window contact sensor • Empty batteries	• Identify and rectify the fault • Replace the batteries

12. Handling

Protect the product against humidity, cold, heat, dust, and direct sunlight.

Do not disassemble the product. Have any repairs per- formed by experts, otherwise the license (CE) of the product will lapse!

Do not drop the product, it will be damaged even if it falls from a low height.

13. Maintenance and cleaning

The product does not require any maintenance apart from replacing of batteries. Clean the product with a soft, clean, dry and fuzz free cloth. To achieve a better cleaning action the cloth can be dampened with lukewarm water.
Take care not to let any moisture get into the product!
Do not use cleaning agents containing solvents, since these may damage the plastic housing and labeling.

14. Information about radio operation

Transmission of data between heating control and valve operating mechanism is performed wirelessly per radio transmission.

The transmitting power is less than 10mW, i.e. much below the transmitting power of a mobile phone which may have a transmitting power that is 200 times as great. Therefore, negative effects on sensitive people or animals are not to be expected.

The radio heating thermostat system works in the 868MHz range which is also used by other radio services. There- fore restrictions in the operation and the range can occur through the devices which work on the same or neighboring frequency.

The range stated of up to 100m is the free-field range, i.e. the range at sight contact between the transmitter and the receiver.

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15. Technical Data

15.1. *FHT 80b* heating control

Typical range in open field..... 100m
Max. no of valve operating mechanisms per unit: 8
Radio frequency: 868.35MHz
Power supply:.....2 LR6 (Mignon/AA)
Battery service life: ..... approx. 2 years
Temperature range when in operation:.....6°C to 30°C
Number of switching times:.....4 per day
Safety code consisting of two parts, up to 10,000 different codes possible

After a battery replacement only date and time have to be reset, all other data are maintained

15.2. *FHT 8V* valve operating mechanism

Power supply:..... 2 LR6 (Mignon/AA)
(if possible use alkaline batteries)
Battery service life:.....approx. 2 years
(depending on the number of valve movements)

ECO HOUSE COMFORT®

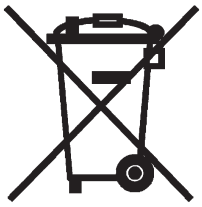
16. Disposal

a) General

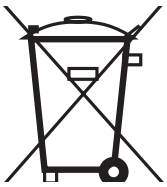
Dispose of the unusable product according to valid legal regulations

b) Disposing of used batteries and accumulators

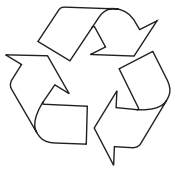
You, as ultimate consumer, are required by law (battery regulations) to return all used batteries. Disposing of used batteries with domestic waste is prohibited!



Batteries / accumulators containing toxins are marked by appropriate symbols which refer to the prohibition of disposal with domestic waste.



The designations for the decisive heavy metals are: Cd = cadmium, Hg = mercury, Pb = lead (The designation can be found on the battery under the dustbin symbol illustrated on the left).



You may return used batteries/accumulators free of charge to collecting stations, our outlets or anywhere else where batteries/accumulators are sold.

By doing so, you fulfil the legal requirements and contribute to the conservation of our environment.

CE The CE sign is a free trade sign addressed exclusively to the authorities and does not warrant any properties.